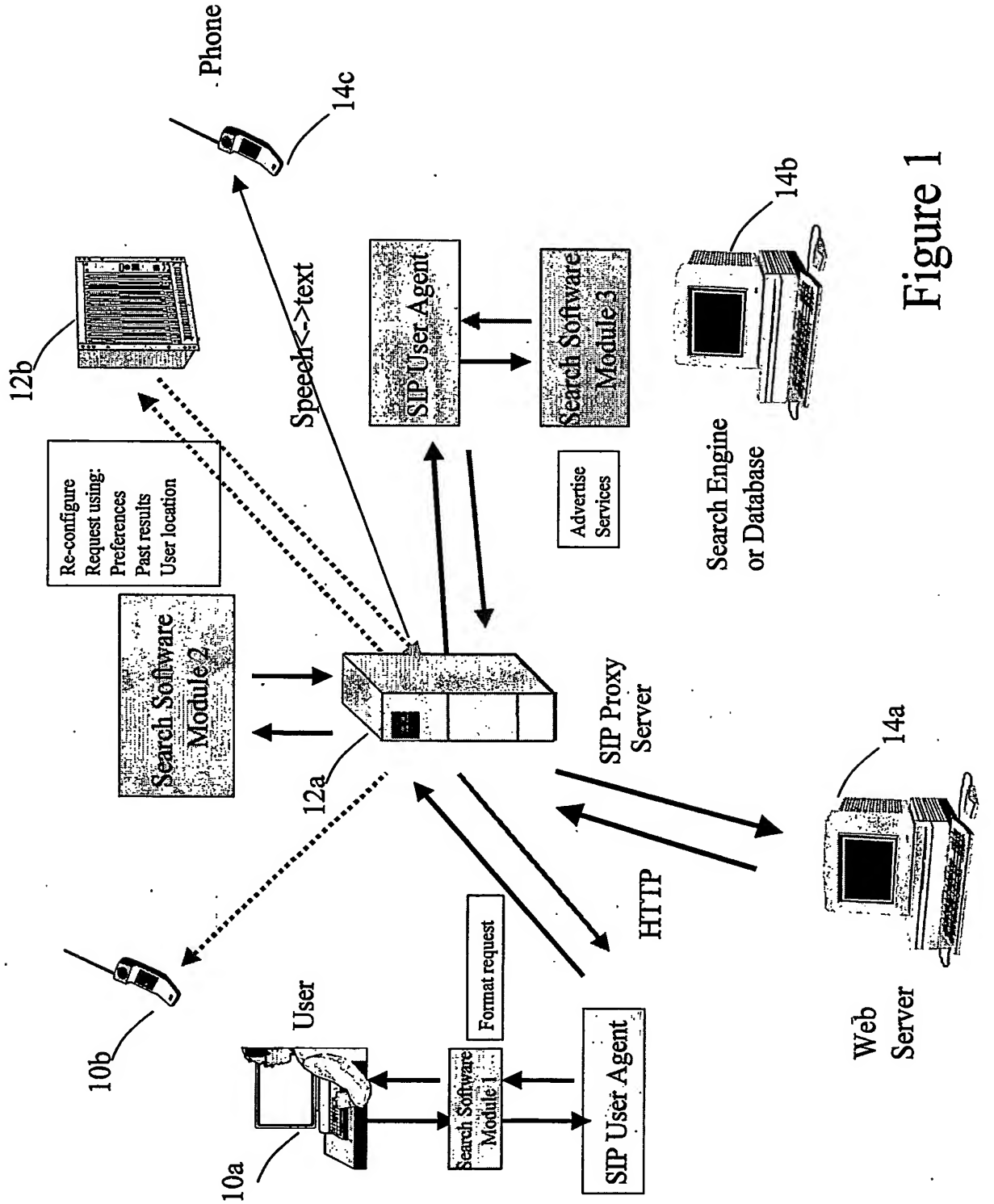

Figure 1

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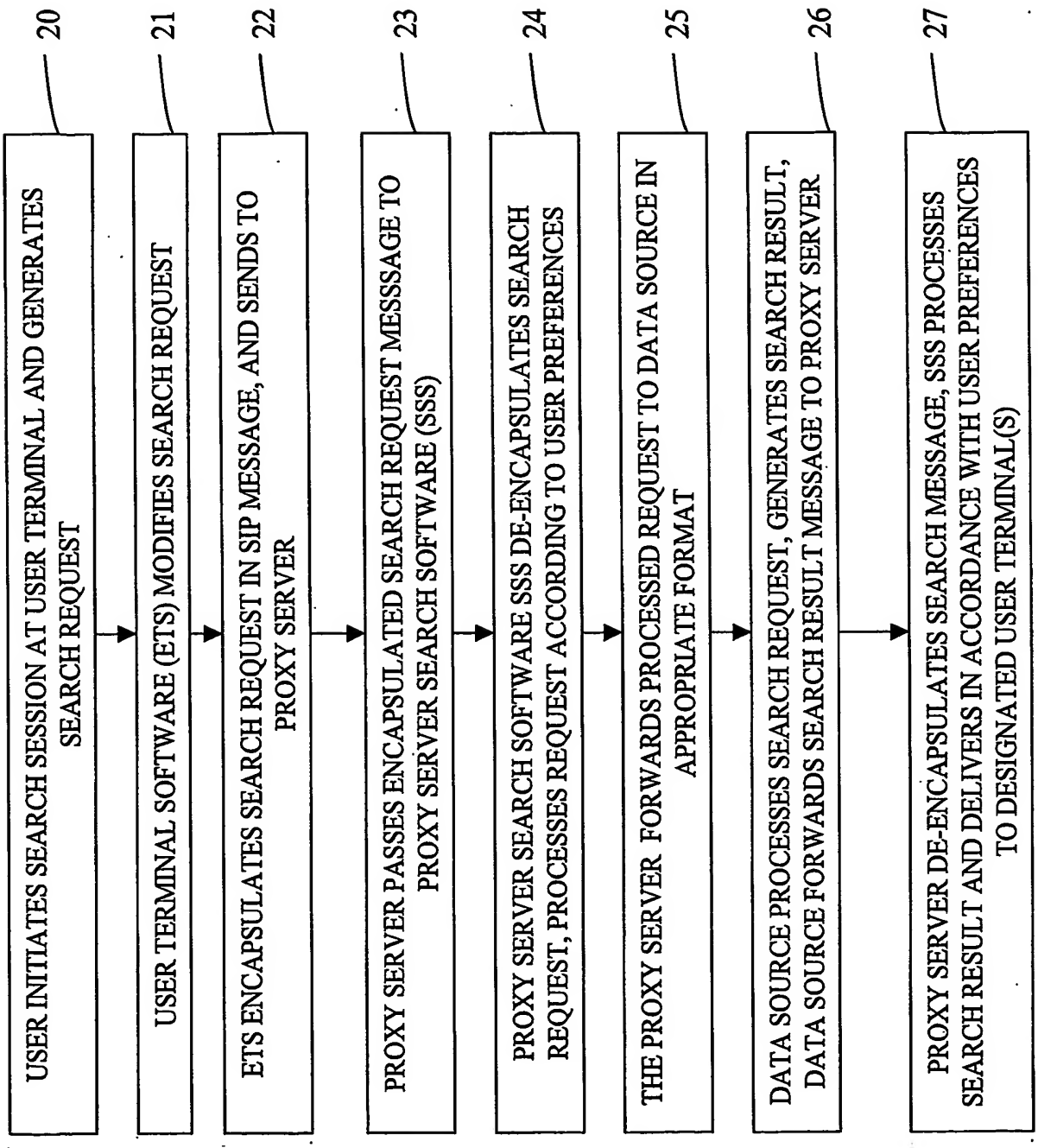
20
USER INITIATES SEARCH SESSION AT USER TERMINAL AND GENERATES SEARCH REQUEST
21
USER TERMINAL SOFTWARE (ETS) MODIFIES SEARCH REQUEST
22
ETS ENCAPSULATES SEARCH REQUEST IN SIP MESSAGE, AND SENDS TO PROXY SERVER
23
PROXY SERVER PASSES ENCAPSULATED SEARCH REQUEST MESSSAGE TO PROXY SERVER SEARCH SOFTWARE (SSS)
24
PROXY SERVER SEARCH SOFTWARE SSS DE-ENCAPSULATES SEARCH REQUEST, PROCESSES REQUEST ACCORDING TO USER PREFERENCES
25
THE PROXY SERVER FORWARDS PROCESSED REQUEST TO DATA SOURCE IN APPROPRIATE FORMAT
26
DATA SOURCE PROCESSES SEARCH REQUEST, GENERATES SEARCH RESULT, DATA SOURCE FORWARDS SEARCH RESULT MESSAGE TO PROXY SERVER
27
PROXY SERVER DE-ENCAPSULATES SEARCH MESSAGE, SSS PROCESSES SEARCH RESULT AND DELIVERS IN ACCORDANCE WITH USER PREFERENCES TO DESIGNATED USER TERMINAL(S)

Figure 2

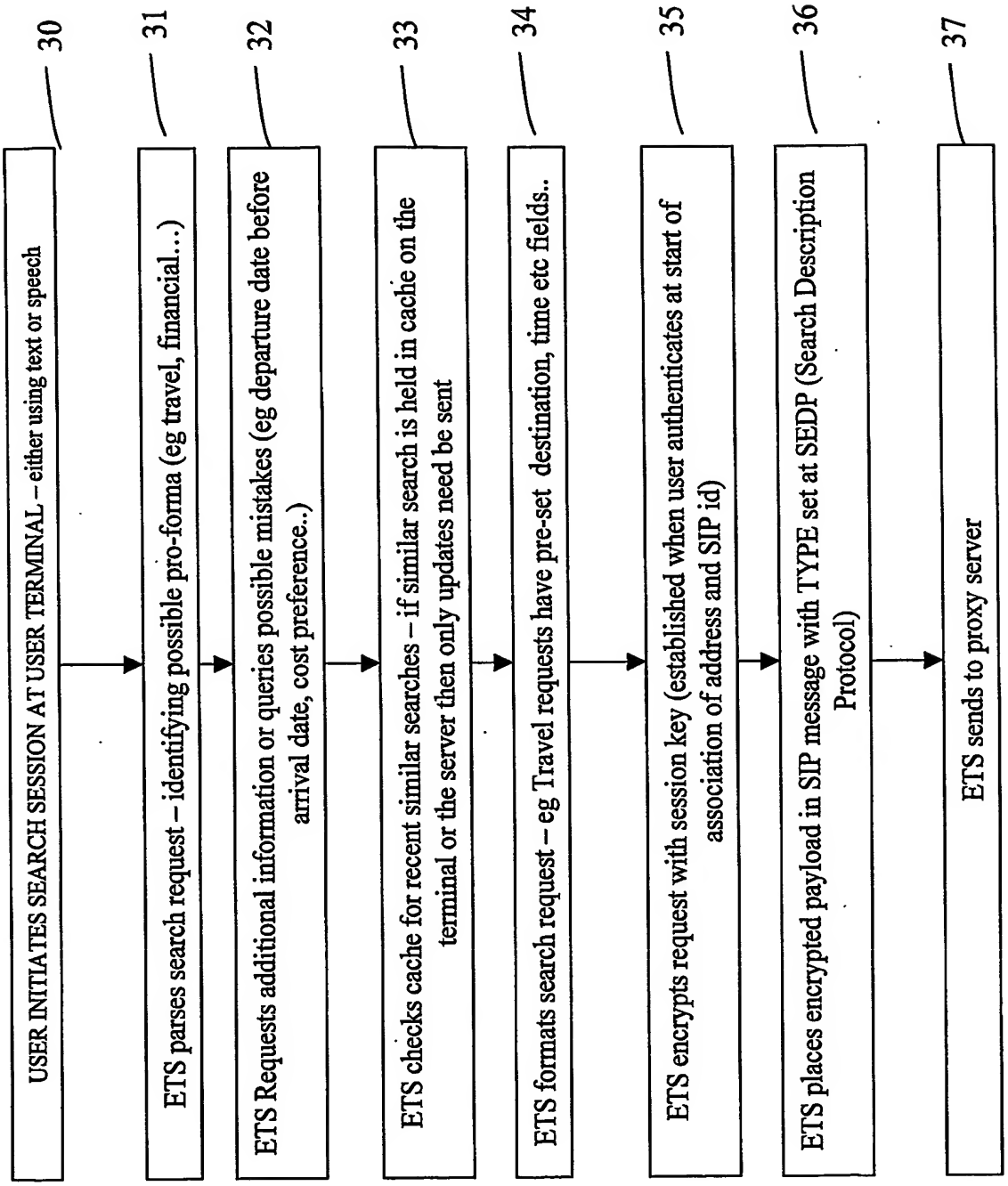
30
USER INITIATES SEARCH SESSION AT USER TERMINAL – either using text or speech
31
ETS parses search request – identifying possible pro-forma (eg travel, financial...)
32
ETS Requests additional information or queries possible mistakes (eg departure date before arrival date, cost preference..)
33
ETS checks cache for recent similar searches – if similar search is held in cache on the terminal or the server then only updates need be sent
34
ETS formats search request – eg Travel requests have pre-set destination, time etc fields..
35
ETS encrypts request with session key (established when user authenticates at start of association of address and SIP id)
36
ETS places encrypted payload in SIP message with TYPE set at SEDP (Search Description Protocol)
37
ETS sends to proxy server

Figure 3

SIP header
INVITE sip:search@bt.co.uk SIP/2.0
Via: SIP/2.0/UDP spain.tel:5060
From: joe.bloggs <sip:joe @atelco.net>
To: Search <sip: Sea@uk.net>
Call-ID: 10000001@atelco .net
CSeq: 1 INVITE
Subject: Urgent search
Contact: Joe Bloggs <sip:joe @atelco .net>
Content-Type: application/SEDP
Content-Length: 160
SEDP Search description
Type = Travel.air
F=Luton;13,4,04; d=Ulan Botar; 28,4,04;;;
AP=british A, NOT Aeroflot, other
P=price
U=instant; update (phone1);
T=urgent
OS= Hotel, Car Hire, Insurance
Sid 6784^^*jjkkj84

Figure 4

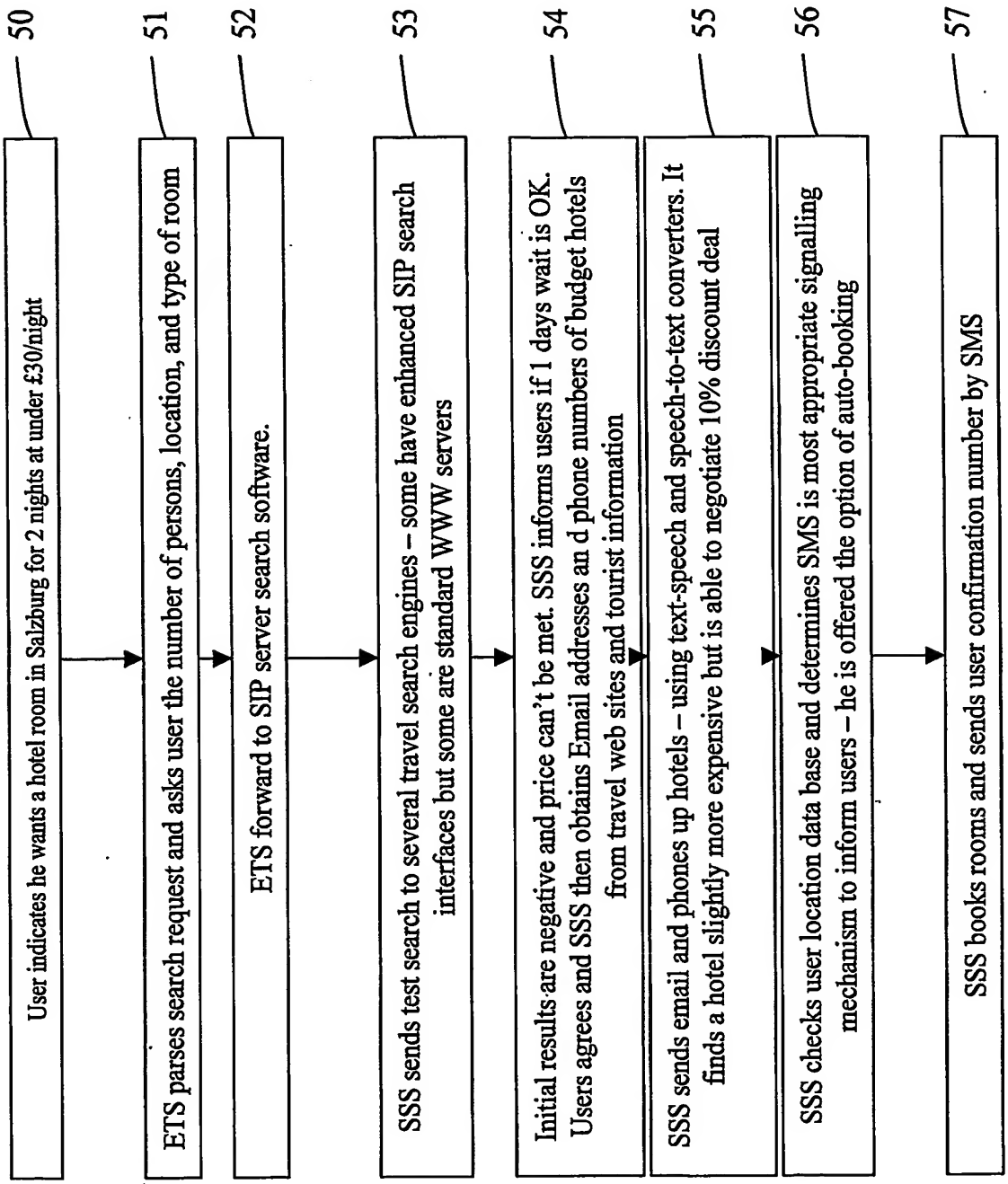
50
User indicates he wants a hotel room in Salzburg for 2 nights at under £30/night
51
ETS parses search request and asks user the number of persons, location, and type of room
52
ETS forward to SIP server search software.
53
SSS sends test search to several travel search engines – some have enhanced SIP search interfaces but some are standard WWW servers
54
Initial results are negative and price can't be met. SSS informs users if 1 days wait is OK. Users agrees and SSS then obtains Email addresses an d phone numbers of budget hotels from travel web sites and tourist information
55
SSS sends email and phones up hotels – using text-speech and speech-to-text converters. It finds a hotel slightly more expensive but is able to negotiate 10% discount deal
56
SSS checks user location data base and determines SMS is most appropriate signalling mechanism to inform users – he is offered the option of auto-booking
57
SSS books rooms and sends user confirmation number by SMS

Figure 5

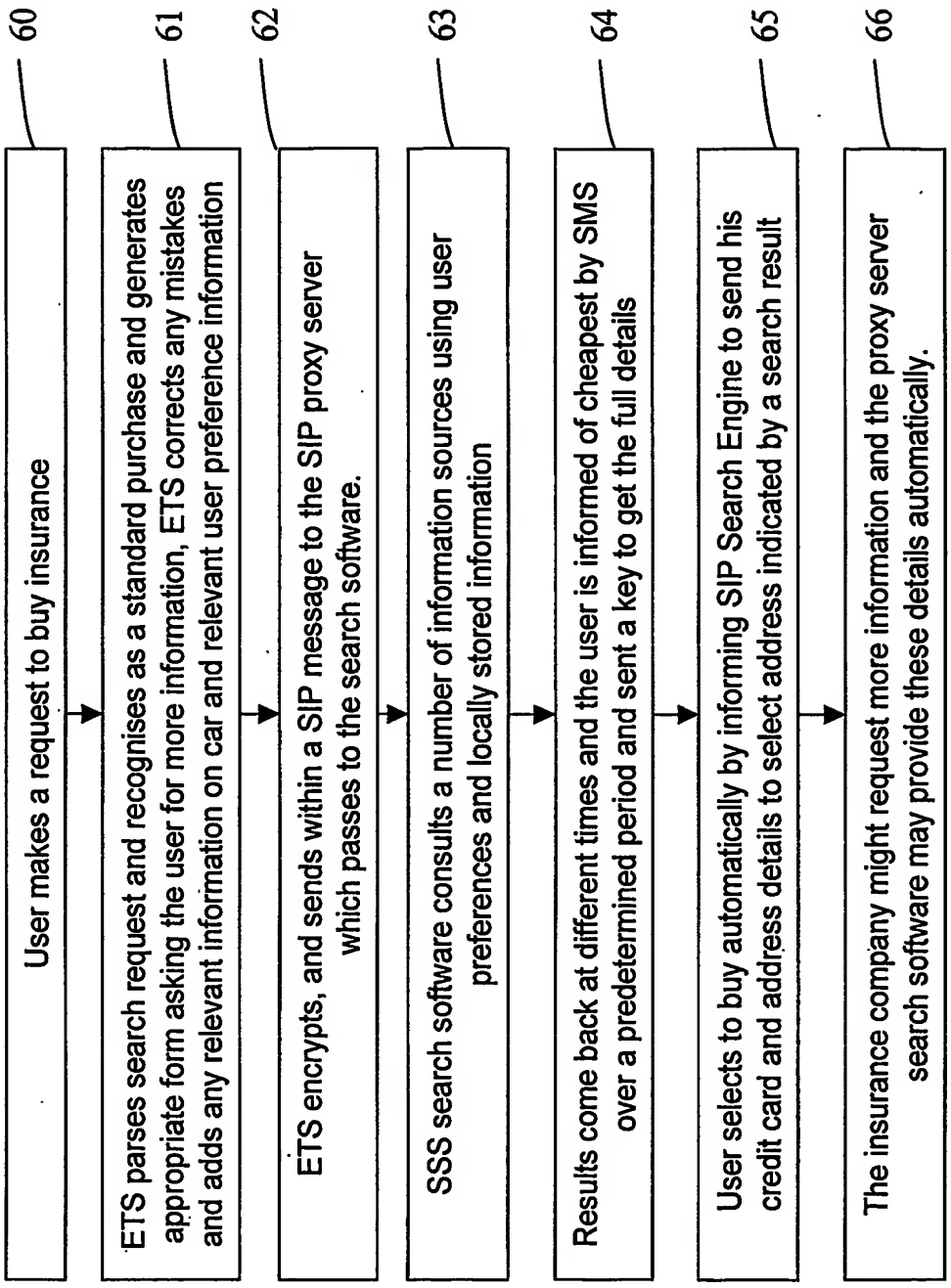
60
User makes a request to buy insurance
61
ETS parses search request and recognises as a standard purchase and generates appropriate form asking the user for more information, ETS corrects any mistakes and adds any relevant information on car and relevant user preference information
62
ETS encrypts, and sends within a SIP message to the SIP proxy server which passes to the search software.
63
SSS search software consults a number of information sources using user preferences and locally stored information
64
Results come back at different times and the user is informed of cheapest by SMS over a predetermined period and sent a key to get the full details
65
User selects to buy automatically by informing SIP Search Engine to send his credit card and address details to select address indicated by a search result
66
The insurance company might request more information and the proxy server search software may provide these details automatically.

Figure 6

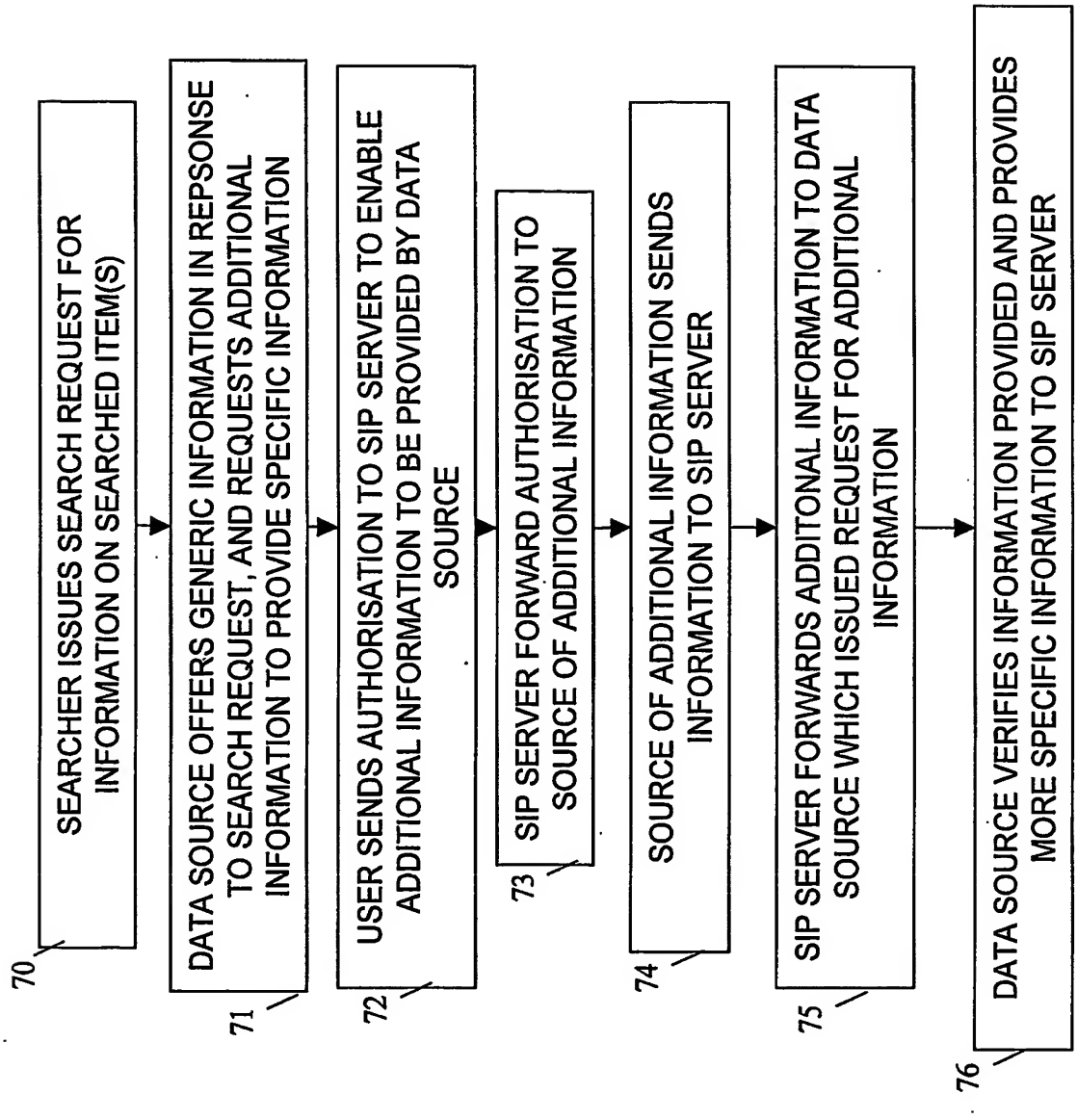
70
SEARCHER ISSUES SEARCH REQUEST FOR INFORMATION ON SEARCHED ITEM(S)
71
DATA SOURCE OFFERS GENERIC INFORMATION IN REPSONSE TO SEARCH REQUEST, AND REQUESTS ADDITIONAL INFORMATION TO PROVIDE SPECIFIC INFORMATION
72
USER SENDS AUTHORISATION TO SIP SERVER TO ENABLE ADDITIONAL INFORMATION TO BE PROVIDED BY DATA SOURCE
73
SIP SERVER FORWARD AUTHORISATION TO SOURCE OF ADDITIONAL INFORMATION
74
SOURCE OF ADDITIONAL INFORMATION SENDS INFORMATION TO SIP SERVER
75
SIP SERVER FORWARDS ADDITONAL INFORMATION TO DATA SOURCE WHICH ISSUED REQUEST FOR ADDITIONAL INFORMATION
76
DATA SOURCE VERIFIES INFORMATION PROVIDED AND PROVIDES MORE SPECIFIC INFORMATION TO SIP SERVER

Figure 7

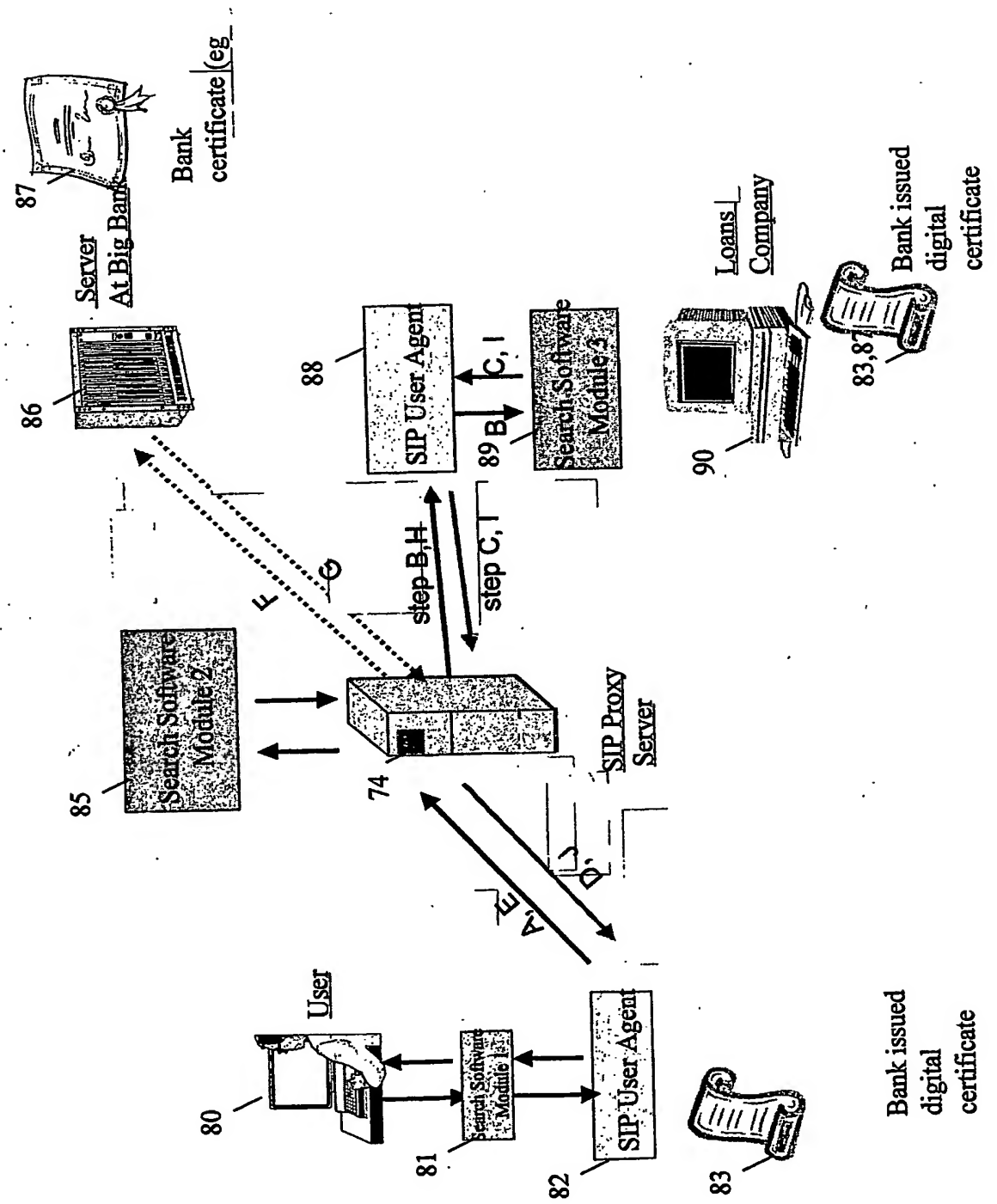

Figure 8

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9/9

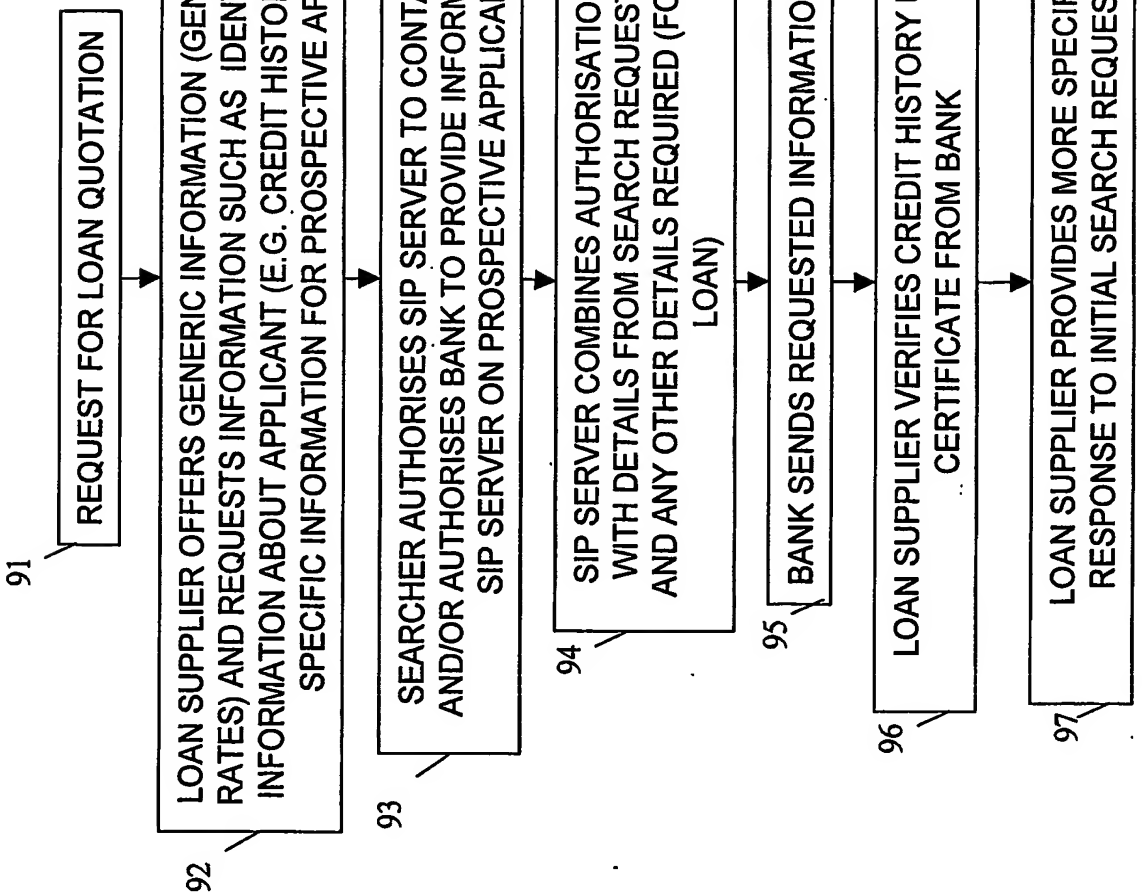
91
REQUEST FOR LOAN QUOTATION
92
LOAN SUPPLIER OFFERS GENERIC INFORMATION (GENERAL INTEREST RATES) AND REQUESTS INFORMATION SUCH AS IDENTITY AND OTHER INFORMATION ABOUT APPLICANT (E.G. CREDIT HISTORY) TO PROVIDE SPECIFIC INFORMATION FOR PROSPECTIVE APPLICANT
93
SEARCHER AUTHORISES SIP SERVER TO CONTACT BANK AND/OR AUTHORISES BANK TO PROVIDE INFORMATION TO SIP SERVER ON PROSPECTIVE APPLICANT
94
SIP SERVER COMBINES AUTHORISATION WITH DETAILS FROM SEARCH REQUEST AND ANY OTHER DETAILS REQUIRED (FOR LOAN)
95
BANK SENDS REQUESTED INFORMATION
96
LOAN SUPPLIER VERIFIES CREDIT HISTORY USING CERTIFICATE FROM BANK
97
LOAN SUPPLIER PROVIDES MORE SPECIFIC RESPONSE TO INITIAL SEARCH REQUEST

Figure 9